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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/691,680	10/22/2003	Gary Moore	6097P045	6616

8791 7590 03/15/2005

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EXAMINER	
GARLAND, STEVEN R	

ART UNIT	PAPER NUMBER
2125	

DATE MAILED: 03/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/691,680	MOORE ET AL.	
	Examiner	Art Unit	
	Steven R Garland	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/22/03,3/29/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The disclosure is objected to because of the following informalities: in paragraph 0020 it is unclear what " ODBC" represents..

Appropriate correction is required.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 4-7,9 10, and 13-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 4, line 3, " the first subset of data " lacks a clear antecedent basis and it is unclear if this first data is the first data related to the TCSs of parent claim1 or the first data of the SCAU in parent claim 3.

In claim 9, lines 2-3, both "the MCAU " and " the SCAU" lack a proper antecedent basis.

In claim 13 it is unclear if the TCSs acts as a client or server or both given that claim 1 requires that it be a server while claim 13 appears to require that it act as a client.

In claim 14, last two lines, " the inputs, operating conditions, and outputs " lacks a clear antecedent basis. It is also unclear what is met by the inputs, operating conditions and outputs.

In claim 15, lines 4-5, the phrase " including power production each substation" is unclear.

In claim 20, it is unclear as to what the data comprises given the use of the "and/or" term in line 3. Claims 23 and 24 have a similar problem.

The remaining claims fall with the parent claims.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14-24 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Pionzio, Jr. et al. 2002/0029097.

Pionzio, Jr. et al. 2002/0029097 teaches a SCADA system for a wind farm. Pionzio provides SCADA elements at turbines, towers, substations and teaches the use of a server (see the abstract). Pionzio also teaches data collection at the generators and meteorological sites (paragraph 0006), collecting data at various intervals and performing database management on a server (0006); use of a portable device to connect to a local controller (paragraph 0007); storing data locally to prevent data loss (0007); use of a configuration database (0007); gathering and maintaining detailed current and historical information on the inputs, operating conditions, and outputs of all the components (0009) ; providing computing and data storage resources at the on site controllers (0010). Pionzio teaches the use of workstations 30, meteorological sites 40, substation sites 50, turbine sites 60, (0021) that the sites have processing elements (0022); collecting and storing raw data, using the

data for real time display, preserving the data in long term storage (0023,0025), use of a graphical user interface (0026); use of a server (0027); client-server architecture (0028); real time control and monitoring (0030); local data collection and site control with storage sufficient in case the server is unavailable (0031), data collection of various types of information and at various rates such as every minute, every second, every 30 seconds (0033-0035), collecting and storing horizontal and vertical wind speeds, wind direction, temperature(0034), computing meteorology and power data for each turbine and park including averages (0037-0040), that the GUI can display various types of data for each turbine, park, meteorological site, substation, etc. (0044-0048); monitoring weather conditions at 4 levels (0080); the use of various protocols (0098), data on reactive power, power , power factor, wind speed, energy, generator rpm, generator temperature, ambient temperature, phase voltage, phase current, production time, etc. (note table 1 for example) . See the abstract, figures; paragraphs 0005-0007; 0009-0010; 0021-0023; 0025-0028; 0030-0044; 0050-0063; the tables; 0079-0087; 0088-0095; 0098-0100; 0104,0107, 0109, 0111;0113-0114; and paragraph 0142 on; and the claims.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pionzio, Jr. et al. 2002/0029097.

Pionzio, Jr. et al. 2002/0029097 teaches a SCADA system for a wind farm. Pionzio provides SCADA elements at turbines, towers, substations and teaches the use of a server (see the abstract). Pionzio also teaches data collection at the generators and meteorological sites (0006), collecting data at various intervals and performing database management on a server (0006); use of a portable device to connect to a local controller (0007); storing data locally to prevent data loss (0007); use of a configuration database (0007); gathering and maintaining detailed current and historical information on the inputs, operating conditions, and outputs of all the components (0009) ; providing computing and data storage resources at the on site controllers (0010). Pionzio teaches the use of workstations 30, meteorological sites 40, substation sites 50, turbine sites 60, (0021) that the sites have processing elements (0022); collecting and storing raw

data, using the data for real time display, preserving the data in long term storage (0023,0025), use of a graphical user interface (0026); use of a server (0027); client-server architecture (0028); real time control and monitoring (0030); local data collection and site control with storage sufficient in case the server is unavailable (0031), data collection of various types of information and at various rates such as every minute, every second, every 30 seconds (0033-0035), collecting and storing horizontal and vertical wind speeds, wind direction, temperature, (0034), computing meteorology and power data for each turbine and park including averages (0037-0040), that the GUI can display various types of data for each turbine, park, meteorological site, substation, etc. (0044-0048); monitoring weather conditions at 4 levels (0080); and the use of various protocols (0098). See the abstract, figures; paragraphs 0005-0007; 0009-0010; 0021-0023; 0025-0028; 0030-0044; 0050-0063; the tables; 0079-0087; 0088-0095; 0098-0100; 0104,0107, 0109, 0111;0113-0114; and paragraph 0142 on; and the claims.

Pionzio however does not specifically state that the second subset of data is stored until it is successfully transferred. Pionzio however does teach storing data locally in case the server is unavailable (0031).

It would have been obvious to one of ordinary skill in the art to modify Pionzio to store the data until it is successfully transmitted and no longer needed in view of the teaching of Pionzio. This would limit the size of the required memory but also insure that data is not lost in case the server is not available.

9. Claims 14-16, 19,20,23, and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Ghosh et al. 2004/0230377.

Ghosh et al. 2004/0230377 teaches a system for managing a wind farm having wind parks (elements 12,14). The system has a server, uses real time data (abstract); SCADA elements in the generators WTG, meteorological equipment MET, substation SUB (0026); client/server system (0036); history data and GUI (0040); monitoring various variables such as turbine status, wind speed, temperatures, voltage, current, etc. (0041), data for individual elements, parks, and farms is also available (0044); scanning at different rates (0083); various data displays on a GUI (0096), See the abstract; figures, 0005-0007,0026-0028; 0032;0036;0038; 0040;0041;0044;0048-0050; 0054-0056;0083; 0096; 0098;0100;0119-0131;0142; and the claims.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Noethlichs 2003/0102675 teaches the use of servers (0014-0015); measuring weather conditions (0025); etc.

Henriksen et al. WO 03/029648 teaches a SCADA system with a server. See the figures, abstract, and page 4, line 37 to page 5, line 8.

The Business Wire article teaches a SCADA system which monitors various turbine conditions such as conditions of bearings, gearboxes, etc.; that the data is collected and stored and then the data can be polled or uploaded.

The G.J. Smith article teaches that a typical wind farm has wind generators, a meteorological mast, a substation, and uses SCADA. Smith further teaches that the

SCADA system provides communication between the control room and the different elements such as the substation, masts, and generators. The SCADA system also provides machine status, power output, wind speed as basic features and in addition logs statistical information and event information about the individual machines and the wind farm. Smith also teaches generating reports on energy production for individual machines as well as the farm. Smith further teaches that the SCADA system can be used to log other information, access the operating parameters and modify them.

Kauppila et al. WO 03/077048 teaches a wind farm;, monitoring various conditions such as temperature, pressure and speed of rotation; storing a continuous history; use of a configuration database; a wind park; display of the condition monitoring information; use of a server; use of various types of interfaces and protocols; See the figures, page, 4 , lines 20-33; page 6, lines 23-34; page 7, lines 26-34; page 8, lines 25-34; page 9, lines 5-30; page 10, lines 1-29; and page 13, lines 5-25.

Suliman et al. 2004/0264082 teaches the use of various types of protocols (0034) ; storing data and use of a server(0044-0045).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven R Garland whose telephone number is 571-272-3741. The examiner can normally be reached on Monday-Thursday from 6:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard, can be reached at (571)272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SRG
STEVEN GARLAND

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

CLAIMS

What is claimed is:

1. A supervisory command and data acquisition (SCADA) system to manage a wind farm comprising:

a plurality of turbine communication servers (TCSs) within wind turbines of the wind farm to collect data from the turbines and to store a first subset of the data locally and to transmit the first subset of data according to non-real-time intervals and to transmit a second subset of data over a wind farm network to provide approximately real-time data, wherein the second subset of data is stored until successfully transferred; and

a server coupled to communicate with the plurality of TCSs to provide signals to control the wind turbines, the server being further to store data received from the plurality of TCSs and to perform database management on the received data.

2. The system of clam 1 wherein the non-real-time intervals comprise one of: a predetermined time interval, in response to a request from the server, or occurrence of a predetermined set of conditions.

3. The system of claim 1 further comprising a substation command and acquisition unit (SCAU) located at a substation and coupled with the server to collect data from the substation and to store a first subset of the data locally and to transmit the first subset of data according to non-real-time intervals and to transmit a second subset of data over the wind farm network to provide approximately real-time data, wherein the second subset of data is stored until successfully transferred.

4. The system of claim 3 further comprising a meteorological command and acquisition unit (MCAU) located a meteorological site to collect meteorological data from sensors at the meteorological site to transmit the first subset of data according to non-real-time intervals and to transmit a second subset of data over the wind farm network to provide approximately real-time data, wherein the second subset of data is stored until successfully transferred.

5. The system of claim 4, wherein the meteorological site has a meteorology tower with sensors to monitor horizontal wind speed and direction from at least four levels above the ground, vertical wind speed, temperature, and atmospheric pressure.

6. The system of claim 5, wherein the MCAU comprises a computer system running a general purpose operating system, and further wherein the MCAU executes a client application providing local data collection and site control.

7. The system of claim 4, wherein one or more of the TCSs are configured to provide a connection for a portable device to allow a user of the portable device to communicate with one or more of the plurality of TCSs, the MCAU and/or the SCAU.

8. The system of claim 1 wherein the first subset of data is transmitted according to a first protocol and the second subset of data is transmitted according to a second protocol.

9. The system of claim 1, further comprising a graphical user interface (GUI) that can be accessed through a connection to one of the plurality of TCSs, the MCAU and/or the SCAU.

10. The system of claim 9, wherein the user interface provides views to of the plurality of TCSs, the MCAU and/or the SCAU to allow users access to real time data and subsystem controls.

11. The system of claim 1, wherein one or more of the plurality of TCSs is configured to store data locally for a period of time sufficient to bridge anticipated unavailability of the server.

12. The system of claim 1, wherein one or more of the plurality of TCSs is configured to collect data including wind turbine controller state, wind speed, energy levels, and alarms.

13. The system of claim 1, wherein one or more of the plurality of TCSs comprises a computer system running a general purpose operating system, and further wherein each of the one or more TCSs executes a client application providing local data collection and site control.

14. A system for managing a wind farm having a plurality of wind turbines comprising:

a Supervisory Command and Data Acquisition (SCADA) element at each wind turbine to collect data from the respective wind turbines;

a SCADA element at each of one or more meteorological sites to collect meteorological data;

a SCADA element at each of one or more substations electrically connected with the plurality of wind turbines; and

a server coupled to communicate with the wind turbine, meteorological, and substation SCADA elements to receive and to store data received from the elements at predetermined intervals and to perform database management on the received data, the server further to gather and maintain current and historical data as to the inputs, operating conditions, and outputs of the plurality of wind turbines.

15. The system of claim 14, wherein the gathered data comprises wind speed and energy production gathered from each wind turbine according to a first predetermined interval, meteorological data gathered from each meteorological site according to a second predetermined interval and substation data including power production each substation.

16. The system of claim 14, wherein the gathered data comprises power, reactive power, wind speed, energy subtotal, and total energy data gathered according to a first time interval.

17. The system of claim 16, wherein the gathered data further comprises generator rotational speed, generator temperature, gearbox temperature, ambient temperature, wind speed, wind direction, real power, reactive power, power factor, phase voltage and phase current for each phase, energy production, and production time.

18. The system of claim 15, wherein the gathered data comprises controller state gathered from each wind turbine, vertical and horizontal wind speeds, wind direction, temperature, and air pressure, total active energy out from the substation, total reactive energy out from the substation, total active energy into the substation, and total reactive energy into the substation.

19. The system of claim 14, wherein the wind farm is organized into parks for reporting and management purposes and the gathered data comprises energy produced by each park.

20. The system of claim 19, wherein the data for each park comprises an operational status of one or more turbines in the park, total real power produced in the park, total reactive power produced in the park, and/or a power factor for the park.

21. The system of claim 14, further comprising a configuration database for the wind farm to store information describing a current configuration of systems elements to be used during system initialization comprising information describing the current

configuration of the wind farm including the wind turbine SCADA elements in the wind farm.

22. The system of claim 21, the configuration information further comprising: information describing each wind turbine of the wind farm, including for each such turbine data source information describing how source data from the turbine is to be mapped to fields in a system database.

23. The system of claim 14, further comprising processing logic to process wind turbine data to report average power production over a time window, expected power production over the time window, and/or production efficiency over the time window for each wind turbine in the wind farm.

24. The system of claim 14, wherein the wind farm is organized into parks and the system further comprises processing logic to wind turbine data to report average power production over a time window, expected power production over the time window, and/or production efficiency over the time window for each wind turbine in each park.